

MATERIAL SAFETY DATA SHEET



LIQUID CARBONIC

INDUSTRIAL/MEDICAL CORPORATION

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DM 151
Liquid Carbon Dioxide

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SECTION I--PRODUCT IDENTIFICATION

CHEMICAL NAME: Carbon Dioxide

COMMON NAME AND SYNONYMS: Liquid Carbon Dioxide, LCO_2 , Carbonic Acid Gas,
"Liqui-Flow" Trade-name

CHEMICAL FAMILY: Non-Metallic Oxides FORMULA: CO_2

SECTION II--HAZARDOUS INGREDIENTS

MATERIAL	VOLUME %	CAS NO.	1985-6 ACGIH TLV UNITS
Carbon Dioxide	99.5	124-38-9	TWA 5,000 ppm STEL 15,000 ppm NEW STEL proposed 30,000 ppm

SECTION III--PHYSICAL DATA

BOILING POINT ($^{\circ}\text{F}$.) Sublimes @ 109.3°F SPECIFIC GRAVITY ($\text{H}_2\text{O}=1$) 1.014 @ 2°F
VAPOR PRESSURE @ 68°F 831 psig % VOLATILE BY VOLUME 100
VAPOR DENSITY (AIR=1) @ 68°F 1.53 EVAPORATION RATE (BUTYL ACETATE=1) N/A
SOLUBILITY IN WATER @ 68°F 87.8% by volume
APPEARANCE AND ODOR Colorless, slight pungent odor gas

SECTION IV--FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED) N/A FLAMMABLE LIMITS LEL None UEL None
EXTINGUISHING MEDIA: Non-flammable gas-- CO_2 is an extinguishing agent for fire-fighting purpose.
SPECIAL FIRE FIGHTING PROCEDURES: Use water spray to cool CO_2 containers exposed to heat and fire to prevent from rupture.
UNUSUAL FIRE AND EXPLOSION HAZARDS: None

SECTION V--HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: TWA (1985-6 ACGIH) is 5,000 ppm
EFFECTS OF OVEREXPOSURE: At 2 to 3% concentration, symptoms of simple asphyxia occur; 3 to 5% causes increased respiration and headache; up to 15% causes headache, nausea, vomiting and unconsciousness. Higher concentrations cause rapid circulatory insufficiency leading to coma and death. CO_2 is the most powerful cerebral vasodilator known. For skin contact or frostbite, flush affected area with warm water. For serious cryogenic burn, see a physician immediately.
EMERGENCY AND FIRST AID PROCEDURES: Remove to fresh air. Get prompt medical attention. Administer oxygen or artificial respiration as needed. Rescue personnel should have self-contained breathing apparatus.
ROUTE(S) OF ENTRY: INHALATION? Yes SKIN? Yes INGESTION?
CARCINOGENICITY: NTP? No IARC MONOGRAPHS? No OSHA? No

SECTION VI--REACTIVITY DATA

STABILITY: UNSTABLE () STABLE (X)

CONDITIONS TO AVOID: N/A

INCOMPATIBILITY (MATERIALS TO AVOID): Forms carbonic acid with moisture. Will react with alkaline material to form neutralized salt.

HAZARDOUS DECOMPOSITION PRODUCTS: None

HAZARDOUS POLYMERIZATION: MAY OCCUR () WON'T OCCUR (X)

CONDITIONS TO AVOID: N/A

SECTION VII--SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Liquid CO₂ will partially form dry ice snow if released to atmospheric pressure. Carbon dioxide is a heavy gas and will collect in low spot and confined areas without assisted ventilation. Evacuate all personnel from affected area. Well ventilate the area. Use self-contained breathing apparatus to enter spilled area. Stop leak and flow.

WASTE DISPOSAL METHOD: Vent slowly to atmosphere with adequate ventilation.

SECTION VIII--SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Positive pressure air line with mask or self-contained breathing apparatus.

VENTILATION: LOCAL EXHAUST (X) Provide adequate ventilation to prevent MECHANICAL (GENERAL) () concentration over allowable TWA or STEL.

PROTECTIVE GLOVES: Loose-fitting, insulated EYE PROTECTION: Safety goggles or glasses and face shield.

OTHER PROTECTIVE EQUIPMENT: Safety shoes, low oxygen alarm (less than 18%) where necessary.

SECTION IX--SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Use only DOT or ASME coded containers. Protect container from physical damage. Follow all the safety rules related to cryogenic fluid. Avoid low storage or confined areas and corrosive chemicals.

OTHER PRECAUTIONS: Refer to CGA Safety Bulletin SB-2 and pamphlets P-1, G-6, G-6.1, G-6.3.

SB-2--"Oxygen Deficient Atmosphere"

G-6--"Carbon Dioxide"

G-6.1--"Standard for Low Pressure CO₂ Systems at Customer Sites"

G-6.3--"Carbon Dioxide Cylinder Filling and Handling Procedures for Beverage Plants, NSDS TD01"

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